

WHAT IS CLAIMED AND DESIRED TO BE SECURED BY LETTERS  
PATENT OF THE UNITED STATES IS:

1. A method for selecting a channel for communication  
5 between two wireless devices, comprising:

synchronizing a wireless modem with a wireless hub on a  
downstream channel of a plurality of downstream channels by  
synchronizing the symbol timing, forward error correction  
framing, and recognition of a synchronization message at the  
10 wireless modem, the channel of the plurality of downstream  
channels being transmitted from the wireless hub to a plurality  
of wireless modems including the wireless modem;

receiving at the wireless modem on the downstream channel a  
message comprising information regarding the parameters for  
15 communicating over each of the plurality of downstream channels;

determining a selected downstream channel of the plurality  
of downstream channels for communication with the wireless hub;  
and

20 resynchronizing the wireless modem with the wireless hub on  
the selected downstream channel of the plurality of downstream  
channels.

2. The method of Claim 1, further comprising:

receiving at the wireless modem on the selected downstream channel a message comprising information regarding priority levels for each of a plurality of upstream channels associated with the selected downstream channel;

5 determining a selected upstream channel of the plurality of upstream channels for communication with the wireless hub based upon the priority levels for each the plurality of upstream channels; and

10 resynchronizing the wireless modem with the wireless hub on the selected upstream channel of the plurality of downstream channels.

15 3. The method of Claim 2 wherein the message comprising information regarding parameters comprises an instruction that instructs the first wireless device to synchronize on the selected upstream channel.

20 4. The method of Claim 1 wherein the message comprising information regarding the parameters for communicating over each of the plurality of downstream channels comprises priority level information for each of the plurality of upstream channel, the step of determining a selected downstream channel of the plurality of downstream channels for communication with the

wireless hub comprising selecting the selected channel based upon the priority level information.

5        5.    The method of Claim 1 further comprising a step of  
receiving at the wireless modem on the downstream channel  
another message comprising information regarding parameters for  
communicating over each of a plurality of other downstream  
channels, wherein the step of determining a selected downstream  
channel comprises selecting the selected downstream channel from  
10    the plurality of downstream channels and the plurality of other  
downstream channels, and wherein the plurality of downstream  
channels and the plurality of other downstream channels  
correspond to different sectors of the wireless hub.

15        6.    A method for selecting a channel for communication  
between two wireless devices, comprising:

receiving at a wireless modem on a downstream channel a  
message comprising information regarding the parameters for  
communicating over each of a plurality of upstream channels, the  
20    wireless modem already being synchronized with the downstream  
channel;

determining a selected upstream channel of the plurality of  
upstream channels for communication with the wireless hub; and

communicating from the wireless modem to the wireless hub on the selected upstream channel of the plurality of upstream channels.

5           7. The method of Claim 6 wherein the message comprising information regarding parameters comprises an instruction that instructs the wireless modem to communicate on the selected upstream channel.

10           8. A method for communicating between two wireless devices in a communication system, comprising:

15           receiving at a first wireless device on a downstream channel a message comprising information regarding parameters for communicating over each of a plurality of downstream channels, the first wireless device already being synchronized with the downstream channel;

          synchronizing the first wireless device on a selected downstream channel of the plurality of downstream channels for receiving communication from the second wireless device; and

20           receiving communication from the second wireless device to the first wireless device on the selected upstream channel of the plurality of upstream channels.

9. The method of Claim 8 wherein the message comprising information regarding parameters comprises an instruction that instructs the first wireless device to synchronize on the selected downstream channel.

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10. The method of Claim 8 further comprising a step of selecting, at the first wireless device, to synchronize on the selected downstream channel based upon priority information for communicating over each of a plurality of downstream channels.

11. The method of Claim 8 wherein the downstream channel is a control channel not being one of the plurality of downstream channels.

12. The method of Claim 8 wherein the downstream channel is one of the plurality of downstream channels and the first wireless device communicating with the downstream channel immediately after initialization.

13. The method of Claim 12 wherein the downstream channel has a lowest information rate of the plurality of downstream channels.

14. The method of Claim 8, further comprising:

receiving at the first wireless device on the selected downstream channel a message comprising information regarding priority levels for each of a plurality of upstream channels associated with the first wireless device;

5       determining a selected upstream channel of the plurality of upstream channels for communication with the second wireless device based upon the priority levels for each the plurality of upstream channels; and

10       re-synchronizing the wireless modem with the wireless hub on the selected upstream channel of the plurality of downstream channels.

15       15. The method of Claim 14 wherein the message comprising information regarding priority levels for each of the upstream channels comprises an instruction that instructs the first wireless device to synchronize on the selected upstream channel.

20       16. The method of Claim 8 further comprising a step of receiving at the first wireless device on the downstream channel another message comprising information regarding parameters for communicating over each of a plurality of other downstream channels, wherein the step of synchronizing the first wireless device on a selected downstream channel comprises selecting the selected downstream channel from the plurality of downstream

channels and the plurality of other downstream channels, and wherein the plurality of downstream channels and the plurality of other downstream channels correspond to different sectors of the second wireless device.

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17. A wireless communication system, comprising:

a wireless hub configured to send downstream communications on at least one of a set of predefined downstream channels and receive upstream communications on at least one of a set of predefined upstream channels;

at least one wireless modem configured to receive said downstream communications, and send said upstream communications;

wherein said wireless modem comprises,

an acquisition unit configured to acquire a predefined downstream channel transmitted by said hub and read DCD messages describing available downstream channels,

a scanning unit configured to scan the available downstream channels, and

a selection unit configured to select the best available downstream channel.

18. The system according to Claim 17, wherein said wireless modem further comprises a channel quality unit

configured to build a list of available channels indicating a quality of reception on each channel.

19. The system according to Claim 17, further comprising:

5 a channel change unit having,

a frame error rate indicator configured to identify when a frame error rate of a current downstream channel is unacceptable, and

10 a re-locking mechanism configured to acquire a new downstream channel.

20. The system according to Claim 19, wherein:

15 said re-locking mechanism performs a re-locking method, comprising the steps of,

scanning downstream channels transmitted DCD messages from said hub in an order based on priority and attempting to lock onto the channels scanned;

re-scanning each of said downstream channels if none was locked onto;

20 selecting a channel based on an alternate criteria if none of said scanning and re-scanning steps resulted in a channel lock, and attempting to lock onto the selected channel; and



re-initializing all channel information and re-starting channel acquisition if said selecting step did not result in a channel lock.

5           21. The system according to Claim 20, wherein said alternate criteria is an MPEG frame error rate.

22. A communication device, comprising:

10           a hub configured to send downstream communications on at least one of a set of predefined downstream channels and receive upstream communications on at least one of a set of predefined upstream channels;

15           wherein:

          said hub includes a DCD message generator that constructs at least one DCD message sent on said downstream channels; and

          said at least one DCD message defines all downstream channels utilized by said hub.

20           23. A modem unit for use in a communication system, comprising:

          a reception unit configured to receive downstream communications on a current downstream channel; and

          a downstream channel selection unit to read DCD messages received by said reception unit and select a best available

channel as said current downstream channel from priorities contained in said DCD messages.

24. The modem unit according to Claim 23, further comprising:

a transmission unit configured to transmit data from said device on a current upstream channel; and

an upstream channel selection unit configured to select the current upstream channel based on priorities of upstream channels described in an UCD message received by said reception unit.

25. The modem unit according to Claim 24, wherein said upstream channel selection unit and said downstream channel selection unit include a change channel mechanism configured to change either the current upstream channel or current downstream channel based on the priorities contained in the respective DCD and UCD messages.

26. The modem unit according to Claim 25, wherein said upstream channel selection unit and said downstream channel selection unit use different priorities for selecting channels for initial communications and for changing a current upstream or downstream channel.

27. The modem unit according to Claim 23, wherein said modem is pre-configured to use a particular cell or sector of a wireless hub to acquire and receive said downstream communications.

28. The modem according to Claim 24, wherein said downstream channel selection unit selects the current downstream channel of a sector based on a highest amount of power of available channels, and said upstream channel selector selects the current upstream channel based on a same sector of the selected downstream channel.